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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/717,138	11/22/2000	Shunpei Yamazaki	0756-2232	2865

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EXAMINER

AKKAPEDDI, PRASAD R

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.D

Office Action Summary	Application No.		Applicant(s)	
	09/717,138		YAMAZAKI ET AL.	
	Examiner		Art Unit	
	Prasad R Akkapeddi		2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,4,7,8,77-84,88-93,97-100,108-114,116,118,120 and 122 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/10/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are
3,4,7,8,11,12,16,17,20,21,25,26,29,30,34,35,38,39,43,44,47,48,52,53,56,57,61,62,65,66,70,71,74,75,77-100,108-
114,116,118,120 and 122.

Continuation of Disposition of Claims: Claims withdrawn from consideration are
11,12,16,17,20,21,25,26,29,30,34,35,38,39,43,44,47,48,52,53,56,57,61,62,65,66,70,71,74,75,85-87 and 94-96.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3,4,7,8, 77-79, 97-100, 108-114, 116,118,120 and 122 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa (U.S.Patent No. 6,195,143) and

Colgan et al. (Colgan) (U.S. Patent No. 5,831,710) and further in view of Seiki et al. (Seiki) (JP-10-096955).

a. As to claims 3,4,7 and 8: Ogawa discloses a liquid crystal panel comprising: a first substrate (821) including a plurality of pixel electrodes (823), a second substrate (825) including a counter electrode (824), a liquid crystal (827), a micro-lens array (830) including a plurality of micro-lenses. Ogawa discloses that the first substrate faces the second substrate through the plurality of pixel electrodes, the counter electrode, the liquid crystal (Fig. 3) and the micro-lens array is provided on a surface of the second substrate (825), the surface being opposite to a surface that faces the first substrate (821). Ogawa also discloses that the plurality of lenses (830) are provided on one-on-one basis with respect to the plurality of pixels (823), see Fig. 6 and (col. 8, lines 63-67), as recited in the instant claim 8.

Although, in Fig. 6 Ogawa shows the end gap holding member (not numbered), Ogawa does not explicitly disclose the gap holding members in the text or does he disclose that the gap holding members are formed by etching an insulating film.

Colgan on the other hand, in disclosing a liquid crystal display, discloses gap- holding members (24) that are circular column shape and tapered, and also discloses that these members are formed by etching an insulating material (col. 3, lines 59-65).

Neither Ogawa nor Colgan disclose that the gap holding members are selectively formed over contact holes where the plurality of pixel electrodes are connected with wirings.

Seiki in disclosing a liquid crystal display device, discloses column-like spacers (26) (i.e., gap holding members) are formed over the contact holes (25) where the plurality of pixel electrodes (23) are connected with electrically connected (page 20, lines 29-32) and (drawing 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the gap holding members over the contact holes to raise the numerical aperture of the pixel, to maintain the gap uniform between the substrates, raise the light transmittance and to offer a liquid crystal display with good display quality (page 5, lines 12-33).

b. As to claims 77-79 and 97-100: Ogawa discloses a liquid crystal projector (Fig. 10D) comprising a white light source (110), splitting means (200) for splitting white light emitted from the white light source into a plurality of lights having different colors (R,G,B), a plurality of liquid crystal panels (250,252,254) respectively corresponding to the plurality of lights; first optical means (120) for irradiating the plurality of lights to the plurality of corresponding liquid crystal panels; and second optical means (270) for condensing a plurality of transmitted lights transmitted through the plurality of liquid crystal panels, wherein: the plurality of liquid crystal panels includes a first substrate (821), a second substrate (825), the plurality of lights are irradiated from a side of the second

substrate (825) to the liquid crystal panel, a pixel portion including a plurality of pixels (823) is provided on the first substrate (821), each of the plurality of pixels includes a pixel electrode (823) and a thin film transistor (822) connected to the pixel electrode, a micro-lens array (830) is provided at a side of the second substrate (825). Ogawa also discloses that the plurality of lenses (830) are provided on one-on-one basis with respect to the plurality of pixels (823), see Fig. 6 and (col. 8, lines 63-67), as recited in the instant claims 78, 79 and 100.

Although, in Fig. 6 Ogawa shows the end gap holding member (not numbered), Ogawa does not explicitly disclose the gap holding members in the text or does he disclose that the gap holding members are formed by etching an insulating film.

Colgan on the other hand, in disclosing a liquid crystal display, discloses gap- holding members (24) and also discloses that these members are formed by etching an insulating material (col. 3, lines 59-65).

As to the newly added limitation in 77-79 and 97-100: Neither Ogawa nor Colgan disclose that the gap holding members are selectively formed over contact holes where the plurality of pixel electrodes are connected with wirings.

Seiki in disclosing a liquid crystal display device, discloses column-like spacers (26) (i.e., gap holding members) are formed over the contact holes (25) where the plurality of pixel electrodes (23) are connected with electrically connected (page 20, lines 29-32) and (drawing 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the gap holding members over the contact holes to raise the numerical aperture of the pixel, to maintain the gap uniform between the substrates, raise the light transmittance and to offer a liquid crystal display with good display quality (page 5, lines 12-33).

c. As to claims 108-114, 116,118,120 and 122: Ogawa does not disclose that the plurality of gap holding members are arranged with a constant interval.

Colgan discloses the constant interval of the plurality of gap holding members (Fig. 2).

4. Claims 80-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa, Colgan and Seiki as applied to claims 78 and 79 above, and further in view of Hirakata et al. (Hirakata) (U.S. Patent No. 5,982,471).

As to claims 80-81: Ogawa discloses a liquid crystal projector with a liquid crystal panel. Ogawa, Colgan or Seiki do not go in to the details of the TFT and active matrix panel itself.

Hirakata in disclosing a liquid crystal display discloses that the thin film transistor includes plurality of pixels (pixel region), a semiconductor film including a source region (310), a drain region (311) and a channel formation region (314) which are connected to the pixel electrodes and a plurality of gap holding members (402) provides over the contact portions.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the gap holding members to provide less non-uniform cell gap (otherwise to provide uniform gap) and reduce poor electrical contacts within the display panel (col. 3, lines 17-24).

5. Claims 82-84, 88-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa, Colgan and Seiki as applied to claims 77, 78 and 79 above, and further in view of Shimuzu et al. (Shimuzu) (U.S. Patent No. 5,739,882).

Ogawa discloses a liquid crystal projector with a liquid crystal panel. Ogawa does not go in to the details of the gap holding members. Colgan discloses that the gap holding members (24) are circular column shape but does not disclose that the gap holding members are made from epoxy resin or UV curable resin.

Shimuzu in disclosing a LCD polymerized spacer discloses that the spacers (gap holding members) have a column shape (17) and are made from UV curable epoxy resin (col.2, lines 39-55).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the gap holding members to provide the gap holding members made from a resin material such that they do not change the state of the liquid crystal orientation (col. 2, lines 1-6) and further by using such polymerized column spacers, light shielding film can be eliminated from the liquid crystal panel (col.16, lines 48-59).

Response to Arguments

6. Applicant's arguments with respect to the above claims have been considered but are moot. The original rejections as stated in the Office action dated August 06, 2002 are still valid. Following is the response by the examiner to the applicant's arguments:

- a. Applicant's argument No. 1 (page 23, lines 24-28 and page 24, lines 1-3):
Ogawa, Colgan, Seiki and either Kirakata or Shimizu, either alone or in combination, do not teach or suggest that a plurality of gap holding members are formed by etching an insulating film formed on a first substrate having a pixel portion, where the first substrate includes a pixel electrode or a thin film transistor. In particular, Ogawa, Colgan, Seiki and either Hirakata or Shimizu do not teach or suggest removing the spacer (26) in Seiki from the opposing substrate side (28) and somehow adding the spacer (26) to a TFT substrate side.

Examiner's response to argument No. 1: As pointed out in the office action above, the teachings of Ogawa, Colgan and Seiki, Kirakata and Shimizu include all the features of the recited limitations. However, the point of the argument boils down to whether the 'plurality of gap holding members formed by etching an insulating film formed on the first substrate' as recited in the amended claims.

The Examiner respectfully points out that the above-amended limitation is confusing. It is not clear from the above statement whether (a) the insulating film

is formed on the first substrate or (b) the gap holding members are formed on the first substrate. If the applicant's intention is (a) then, Colgan clearly teaches that an insulating film is formed on the first substrate (col. 3, lines 59-65). On the other hand, if the applicant's intention is (b), then it can be argued that after the device is assembled, it will be difficult to ascertain whether the gap holding members are formed on either the first or the second substrate. Hence, the teachings of Seiki will meet the recited limitation.

If the claims recite a method step of gap holding members are formed on the first substrate, then the applicant should amend the claims to method claims to properly reflect this feature. Reciting a method step in device claims, results in a Product-by-Process rejection.

b. Applicant' argument No. 2 (page 21, lines 17-23): Independent claims 7,8,78,79,99 and 100 have been amended to recite a pixel electrode with a wiring connected with a thin film transistor or that a plurality of pixel electrodes are connected with wirings connected to a plurality of thin film transistors. Ogawa, Cogan and Seiki, either alone or in combination, do not teach or suggest at least the above-referenced features of the amended claims.

Examiner's response to argument No. 2: Connection of pixel electrodes to thin film transistors with wirings is inherent in liquid crystal display technology. In fact, the prior art by Hirakata (U.S. Patent No. 5,982,471) does explicitly teach that an electric field is produced between the pixel electrode and the TFT to produce a display (col. 1, lines 33-35 of Hirakata). Wiring or some other form of

connection is required to produce electric field between two electrical components. Hence, the claims are not allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 571-272-2285. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PRA

Prasad R Akkapeddi, Ph.D
Examiner
Art Unit 2871

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